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ABSTRACT

A Children's Health Locus of Control Scale (CHLOCS), consisting of 20 items with three subscales (powerful others, internal control, chance control) was developed previously by Parcel and Myer to facilitate measurement of the Internal-External Construct relative to children's health behavior. The present study used two samples of children in grades K-6, also categorized by sex and socioeconomic status, to develop and evaluate a shortened nine-item version of the CHLOCS. The nine-item version proved to be reliable and to have findings consistent with previous validation studies. A version using pictures was more reliable for grade K children and may prove more reliable in grades 1 and 2 as well. (Author/RH)

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RELIABILITY OF A SHORTENED CHILDREN'S HEALTH LOCUS OF CONTROL SCALE

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ABSTRACT

RELIABILITY OF A SHORTENED CHILDREN'S HEALTH LOCUS OF CONTROL SCALE

A Children's Health Locus of Control Scale, consisting of 20 items with three subscales (powerful others, internal control, chance control) was developed earlier by Parcel and Myer to facilitate measurement of the Internal-External Construct relative to children's health behavior. This study used two samples of children Grades K-6, also categorized by sex and SES, to develop and evaluate a shortened nine item version. The nine item version proved reliable and to have findings consistent with previous validation studies. A version using pictures was more reliable for Grade K children and may prove more reliable in Grades 1 and 2 as well.

The social learning theory construct of locus of control has gained considerable attention in research concerning adult health related behavior. The development of a specific Health Locus of Control Scale by Wallston et al.(1976) contributed to an increase in the use of the I-E construct in health behavior research.

Parcel and Myer (1978) developed the Children's Health Locus of Control (CHLC) Scale to facilitate objective measurement of the I-E construct in research concerning children's health behavior. The original CHLC Scale consisted of 20 items with three subscales: (P) powerful others, (I) internal control and (C) chance control. The purpose of the study reported here was to develop and evaluate a shorter version of the scale that could reduce the time needed for administration within the context of a larger questionnaire.

Two samples of children were used: the first to select nine of the original 20 items, and the second for testing the shorter version in a larger stratified sample. As shown in Table 1, the first study included 64 children (four boys and four girls in each of Grades K, 2, 4, 6 at two urban schools, one classified as high and one as low socioeconomic status (SES) as indicated by census data, and validated by a significant difference in the average ratio of persons per bedroom in the households of the children attending the schools. As shown in Table 2, the second sample included 420 children (10 boys and 10 girls in each of grades K-6 at each of three schools -- high, medium and low SES). About half of the children were black. Children were administered the instruments individually at the schools by trained interviewers. Two items were dropped from the scale because they referred to school nurses and there were no school nurses at the schools. The 18 item questionnaire was divided into two parts, with the second part administered first to half of the children. No order differences were found.

The first group of subjects were administered all 18 items (Table 3) and the results were submitted to item and factor analysis. Nine items (Table 4) were selected on the basis of their abilities to improve the reliability of the scale and how well they loaded on the original conceptualized three subscales, i.e., three items were selected for each of the three subscales, P, I, and C. The selected nine items were then incorporated into a larger questionnaire and administered to the second larger sample.

As shown in Figure 1, results of the second administration indicated that scores tended to become more internal with age ($p=.0001$), more internal with higher SES groups ($p=.0001$) and there was a significant interaction effect - subjects within SES groups were more internal as grade increased ($p=.0163$). High SES scores were from 0.9 to 3.3 points higher than low SES scores depending on the grade. No increase in average scores were observed after Grade 5.

A Varimax factor analysis of the nine item scale generally confirmed the existence of the three subscales as shown in Table 5. The three C items loaded on Factor I at greater than .51. However, an I factor also loaded on Factor I at -.56. The remaining two I items loaded on Factor II at greater than .74 with the third at .42. Factor III included the three P items at loadings of greater than .65.

As shown in Table 6, the shorter version of the questionnaire had acceptable levels of reliability for grades 3 through 6. The Alpha reliability coefficient (Kuder-Richardson 20) for the total nine item scale was .685. Reliability coefficients were similar by sex, .680 for males and .695 for females. The reliability of the reduced item scale did not hold up for Grade K children (.030) and tended to be low for Grade 1 (.313) and Grade 2 (.393). Reliability coefficients for other grades ranged from .513 to .742.

Although as shown in Figure 1, the patterns for Grades K, 1 and 2 of the mean scores of the 9 item version CHLC were consistent with those for older children, the reliability coefficients were less satisfactory. Therefore, the authors tested the 18 item version of the CHLC Scale using pictures (Figure 2), and a question format for the items, on the same Grade K children who were in the second study. As shown in Table 7, the reliability coefficient of the 18 item picture CHLC (PCHLC) Scale was .566, which compares with .410 found in the first study which used the same items without pictures. The nine item short version of the PCHLC achieved an Alpha coefficient of .310. The improvement in reliability of the CHLC Scale when pictures were used at the Grade K level suggests that the PCHLC may be more reliable for children in Grades 1 and 2 as well.

In summary, the shorter nine item version of the CHLC Scale proved to be reliable across different age and SES groups, and to have results consistent with previous validation studies of the longer version. The shorter version can be used with confidence on children above Grade 2 in studies needing to reduce the time of administration of a children's health locus of control scale. When younger children are involved, the longer version or PCHLC version should be considered.

References

Parcel GS and M Meyer

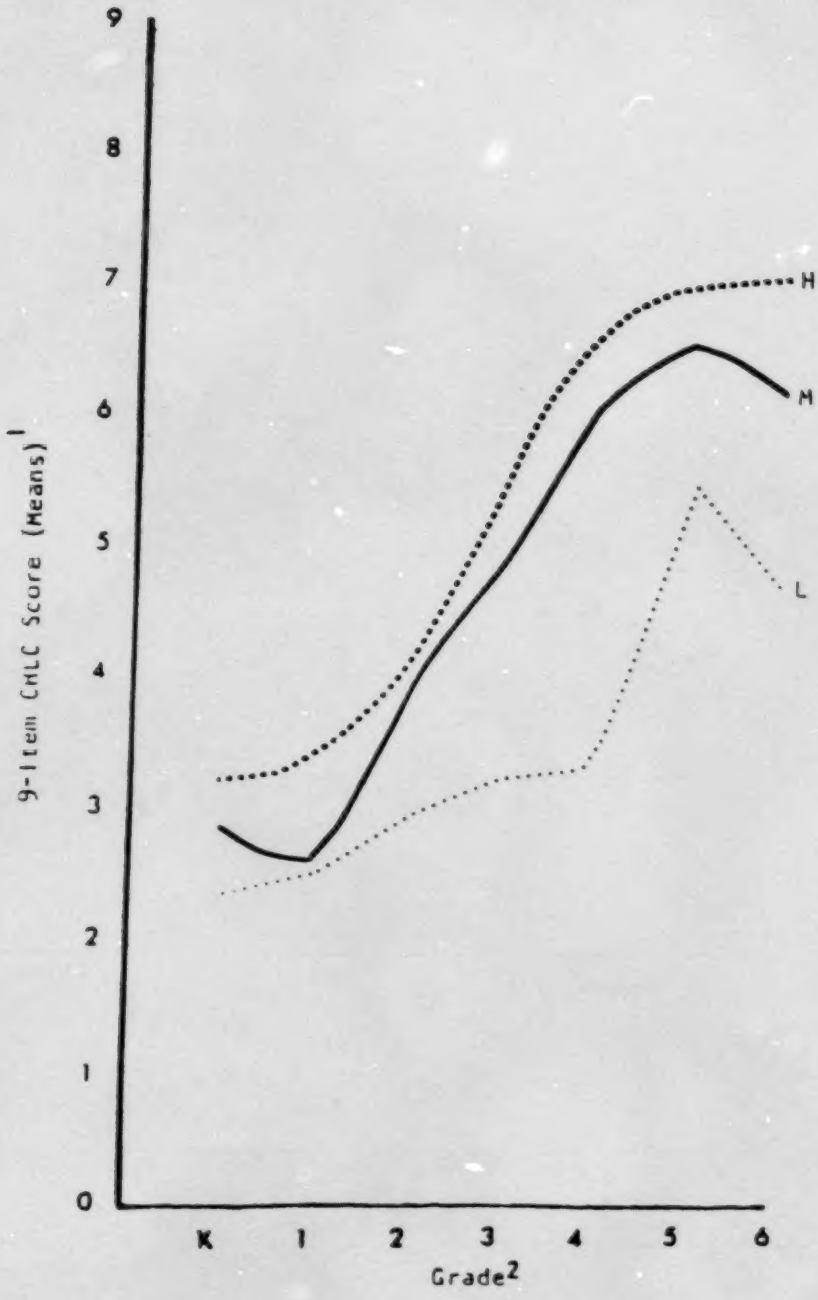
1978 Development of an instrument to measure children's health locus of control. Health Educ Mono 6:149-159.

Wallston BS, Wallston KA, Kaplan GD and SA Maides

1976 Development and validation of the health locus of control (CHLC) scale. J Consult Clin Psychol 44:580-585.

FIGURE 1

Means of 9-Item Children's Health Locus of Control (CHLC) Scale Scores by Grade (K-6) and SES (Low, Medium, and High)



[1]Scale runs 0-9, External-Internal

[2]N=20 for each SES grade combination

FIGURE 2

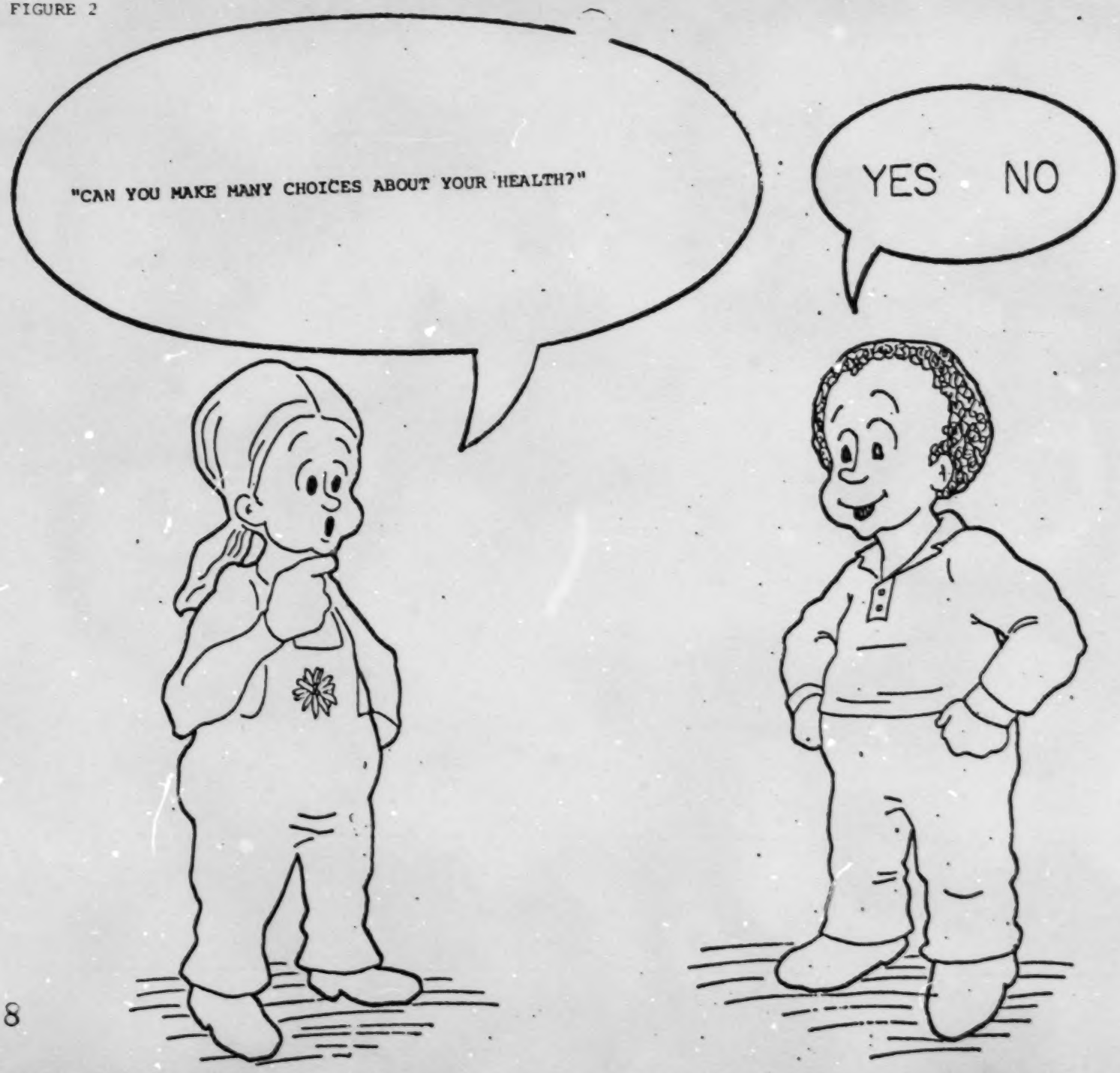


TABLE 1 Number of Children Administered 18 Item CHLC Scale by Socioeconomic Status, Sex, and Grade.

	Socioeconomic Status				
	High		Low		
Grade	Boys	Girls	Boys	Girls	T
K	4	4	4	4	16
2	4	4	4	4	16
4	4	4	4	4	16
6	4	4	4	4	16
					64

Kuder-Richardson 20 Reliability Coefficient = .813

TABLE 2 Number of Children Administered 9 Item CHLC Scale by Socioeconomic Status, Sex, and Grade.

	Socioeconomic Status						
	High		Medium		Low		
Grade	Boys	Girls	Boys	Girls	Boys	Girls	T
K	10	10	10	10	10	10	60
1	10	10	10	10	10	10	60
2	10	10	10	10	10	10	60
3	10	10	10	10	10	10	60
4	10	10	10	10	10	10	60
5	10	10	10	10	10	10	60
6	10	10	10	10	10	10	60
							420

Kuder-Richardson-20 Reliability Coefficient = .685

Table 3 Eighteen Item Version* of the Children's Health Locus of Control (CHLC) Scale.

1. Good health comes from being lucky.
2. I can do things to keep from getting sick.
3. Bad luck makes people get sick.
4. I can only do what the doctor tells me to do.
5. If I get sick, it is because getting sick just happens.
6. People who never get sick are just plain lucky.
7. My mother must tell me how to keep from getting sick.
8. Only a doctor or nurse keeps me from getting sick.
9. When I am sick I can do things to get better.
10. If I get hurt it is because accidents just happen.
11. I can do many things to fight illness.
12. Only the dentist can take care of my teeth.
13. Other people must tell me how to stay healthy.
14. The teacher must tell me how to keep from having accidents.
15. I can make many choices about my health.
16. Other people must tell me what to do when I feel sick.
17. There are things I can do to have healthy teeth.
18. I can do many things to keep accidents from happening.

* Original CHLC Scale contained 20 items; two items referring to school nurses were dropped.

Table 4 Nine Item Version of the Children's Health Locus of Control Scale (CHLC) Scale.

1. Good health comes from being lucky.
2. I can do things to keep from getting sick.
3. Bad luck makes people get sick.
4. People who never get sick are just plain lucky.
5. My mother must tell me how to keep from getting sick.
6. Only a doctor or nurse keeps me from getting sick.
7. I can do many things to fight illness.
8. The teacher must tell me how to keep from having accidents.
9. I can make many choices about my health.

Table 5 Varimax Factor Analysis of 9 Item Children's Health Locus of Control (CHLC) Scale.

		Rotated Factor Pattern		
CHLC Item	Dimension*	F-I	F-II	F-III
1	C	.524	.122	.483
2	I	-.011	.819	-.037
3	C	.514	.161	.438
4	C	.682	.038	.178
5	P	.005	-.293	.728
6	P	.219	.295	.657
7	I	.110	.748	.103
8	P	.101	.117	.755
9	I	-.557	.420	.367

Proportional contributions to common variances by rotated factors: F-I = 1.414; F-II = 1.636; F-III = 2.134.

*Control: C = Chance I = Internal P = Powerful Others

Table 6 Statistics for 9 Item Children's health Locus of Control Scale.*

Subgroup	N	X	S.D.	K-R-20
Kindergarten	60	12.89	1.32	.030
Grade 1	60	12.86	1.60	.313
Grade 2	60	13.64	1.63	.393
Grade 3	60	14.49	2.05	.640
Grade 4	60	15.30	2.20	.742
Grade 5	60	16.22	1.46	.513
Grade 6	60	15.95	1.82	.660
Males	240	14.60	2.14	.680
Females	240	14.33	2.22	.695
Low SES	140	13.49	1.94	.562
Med SES	140	14.68	2.07	.656
High SES	140	15.26	2.12	.712
Total	420	14.48	2.17	.685

*Scale 9-18 External-Internal

Table 7 Statistics for Eighteen Item Picture Children's Health Locus of Control Scale.*

Kindergarten	N	X	S.D.	K-R-20
Males	30	28.23	2.84	.517
Females	30	28.73	3.03	.624
Low SES	20	26.95	2.89	.559
Med SES	20	30.15	2.35	.353
High SES	20	28.35	2.68	.479
Total	60	28.48	2.92	.566

*Scale 18-36 External-Internal